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Circular Economy SWOT analysis in South-Africa, Botswana and Namibia

Case Study: Honkajoki Ltd.

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Case: Honkajoki Oy

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TIIVISTELMÄ

Opinnäytetyössä tutkittiin kiertotalouden mahdollisuuksia sekä haasteita Etelä-Afrikassa, Namibiassa ja Botswanassa SWOT -analyysin avulla. Vastaavanlaisia tutkimuksia ei juurikaan ole tehty, mikä ei ole yllättävää sillä järjestelmällisen kiertotalouden harjoitus on varsin vähäistä eteläisen Afrikan maissa. Afrikka kuitenkin tarjoaa potentiaalisen ja mielenkiintoisen ympäristön kiertotaloudelle.

Toimeksiantajana tutkimukselle oli suomalainen Honkajoki Oy, joka harjoittaa kiertotaloutta ja on kiinnostunut eteläisen Afrikan markkinoista. Tutkimuksessa pyrittiin selvittämään mitkä asiat tekevät kohdemaista otollisen kiertotalouden eri muodoille ja ideoille, ja mitkä taas eivät. Tutkimus materiaalin kerääminen oli välillä haasteellista, koska tutkimukseen tarvittavien haastatteluiden saaminen oli vaikeaa ja tietoa kiertotaloudesta kohte maissa ei ollut saatavilla.

Tulokset maiden välillä olivat hyvin samankaltaisia. Etelä-Afrikan, Namibian ja Botswanan välillä oli vähän eroja maiden insfrastruktuurissa, ympäristössä ja valtarakenteissa. Etelä-Afrikka on alueen talousmahti ja omaa huomattavasti suuremman väkiluvun ja bruttokansantuotteen muihin maihin verrattuna. Haasteina esiin tulivat ihmisten asenteet kestävää kehitystä kohtaan ja taitojen puute teknologiassa. Mahdollisuuksia taas tarjoavat lähes rajattomat uusiutuvan energian resurssit ja vähäinen järjestelmällinen kierrätys, jolle kuitenkin olisi tarvetta niin jätteenkäsittelyssä kuin uusien vaihtoehtoisten ideoiden luomisessa.

Liiketoiminnallisesti kiertotalouden näkökulmasta kohdemaat voitaisiin rinnastaa hiomattomiksi timanteiksi, joissa olisi sijaa kiertotalouden malleille. Kiertotalouden mallit tulisi vain saada istutettua ihmisten mieliin ja luoda kokonaisratkaisuja, joissa olisi useita voittajia. Koulutus ja ohjaus teknologian sekä kiertotalous mallien käyttöön on myös ensiarvoisen tärkeää tavoitteiden saavuttamiseksi.

Asiasanat: kiertotalous, eteläinen Afrikka, kiertotalouden mallit, asenteet

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ABSTRACT

This case study examined Circular Economy`s potential and challenges in South Africa, Namibia and Botswana using by SWOT analysis. Similar studies have not been done or published before which is not surprising since organised Circular Economy is very small in southern Africa. However, southern Africa contains a huge and fascinating environment for the Circular Economy.

The study was commissioned by Honkajoki Oy (Ltd) that practices Circular Economy and is very interested in the markets in Africa. In this study, the goals were to find out the factors that favour and unfavour the different business models and ideas of Circular Economy. Collecting the material was challenging at times because of the difficulty of setting appointments with the interviewees. The lack of material about Circular Economy in Africa was an issue as well.

The results between the study countries were similar. South Africa, Namibia and Botswana had very little differences in infrastructure, environment and power structure. South Africa is the strongest economy in the area and holds the largest population and GDP compared to the other countries. The biggest challenges were attitude towards sustainable development and poor skills in technology. Yet, opportunities were found in unlimited renewable energy resources and non-excistency of recycling. The whole recycling system needs to be built.

The potential is known, the next question is: how to make things work and progress? The demand is huge in southern Africa for solutions like Circular Economy business models. The problem is how to sell the idea and create complete packages. Education and guidance in technology will play a big role as well.

Keywords: Circular Economy, southern Africa, business models, attitudes

CONTENT

1 INTRODUCTION

The world´s human population is growing rapidly even if it is not growing that fast compared to the last two decades. The highest rate of population growth in some Third World Countries is 4% per year or higher, then again in some First World countries it is only 1% and for example Italy and Japan have decreasing population growth rates. Population growth also means that more resources are required; food, space, water, energy and other materials. For instance, if China achieves its goals in development and obtains First World economy and living standards, the whole world´s energy and resource consumption will rise 94%. Such an increase has crucial effects to the environment and sustainable development in the whole world even if the other world stays unchanged. The same applies also to the other Third World Countries; as a result low-income citizens become high-income citizens. One way or another; living standards rise in the Third World Countries whose inhabitants are seeking for First World standards by developing their own country or immigrating to First World Countries. (Diamond 2005, 520-524.)

One of the most promising solution to solve a growing demand in many sectors is Circular economy. The idea of Circular Economy was introduced in 1990 to offer a solution for the environmental issues and resource scarcity. The concept of Circular Economy was introduced by Pearce and Turner in their Economics of Natural Resources and the Environment (1990.). The main principles of Circular Economy are reducing, reusing, recycling materials and providing services that support the above mentioned principles. Other essential parts are to get energy from renewable sources, rebuild the eco-system and resources on to a suistainable level for the humans and their future on the planet. Circular economy is regarded as the only alternatively serious option to replace our current extravagant economy and unsustainable environmental policy. (A Review of the Circular Economy and Its Implementation 2015, 7.)

One of the objects in Circular Economy is to keep the resources in the economical circle after the resources have reached their current purpose. Basically, the goal is to design and manufacture a product that would remain in the economy for as long as possible. The transformation to Circular Economy requires changes in the whole value chain of a product. New business models, designs and marketing methods are essential parts to obtain a breakthrough. Regardless the name ‘Circular Economy’ it is not a separated economy model, it is more a horizontal and an extensive revolution in the current economy. (Ympäristöministeriö 2017) This study concentrates more in a product as material than to leasing service platforms in Circular Economy. The client of the case study is Honkajoki Oy that practices Circular Economy in Finland.

2 FROM LINEAR CONSUMPTION TO CIRCULAR ECONOMY

Classic ‘take-make-dispose’ -model is not a functional way for producing anymore in the world we live in. The model is dependent on large quantities of energy and raw materials, and it is not equivalent to sustainable development standards. In other words, linear consumption does not have enough elements to boost sustainable development and resource saving. The reduction of fossil fuel usage and energy consumption is a necessary action to be done in manufacturing. Therefore, circular economy´s cornerstone is to rely on renewable energy. (Ellen MacArthur Foundation 2013, 7.)

Linear consumption has controlled the last decades; companies have searched different raw materials for making new products and then sell them. In 2010, 65 billion tonnes of raw material entered in economics and it is expected that in 2020 the amount of raw material will rise to 82 billion tonnes. At the same time companies have started to realise that linear consumption –model is not sustainable for companies as it is not for the nature anymore. Increase in resource prices and supply disruption creates imbalance in companies´ business. Unpredictable prices and supply of resources makes it difficult for companies to match with competition and customers demands. It is estimated that there will be 3 billion new middle-class consumers entering into the markets by 2030 and most of them from third World. Due to that it is uncertain how markets can meet the growth requirements in the future. (World Economic Forum 2014, 13.)

Adapting Circular Supply-Chain is not only giving an economical advantage. It also allows companies to create better products for customers, be a step ahead of other companies and increase their comptetiviness. Producers that use circular supplies over traditional linear supplies can expect growing market shares quite fast. Since it is assumed that customers would prefer circular supplies more than linear supplies if the quality and the price is the same. Conversely, some policies are creating barriers to the Circular Supply-Chain. For instance, the usage of

virgin resources is partly funded by subventions which create distortion on prices. Removing these subventions would create more fair competition and force companies to raise prices, therefore and thus support a revolution of the Circular Economy. (Lacy & Rutqvist 2015, 35-38.)

2.1 Principals of Circular Economy

The main principals of circular economy are that waste does not exist, end products must be produced, manufactured and designed in a certain way that it can be reused, not to mention the essentiality of reducing the amount of waste in producing. (World Economic Forum 2014.)

Firstly, biological waste and nutrients can be treated and used for producing biogas due they are non-toxic. Whereas, man-made materials can not be treated same way. That is why for example polymers and alloys should be designed with high quality and minimal energy so technical nutrients can be used again. Common belief is that recycling reduces quality of products and does not remove toxic compounds, but when designing is done well enough, materials will not loose their quality or release toxic compounds. (Ellen MacArthur Foundation 2013, 22.)

Secondly, an unexpectable and fast-evolving world demands modularity, versatility and adaptivity from manufacturing. According to Professor Dr. Michael Braungart (2016) “Natural systems support resilient abundance by adapting to their environments with an infinite mix of diversity, uniformity and complexity. The industrial revolution and globalization focused on uniformity so our systems are often unstable. To fix that we can manufacture products with the same flair for resilience by using successful natural systems as models”. (Ellen MacArthur Foundation 2013. 22.)

Thirdly, Circular economy circle´s energy requirement should be fulfilled by renewable energy. The aim is to make companies self-sufficient and decrease exposure to crisis, oil shock for example (Accelerating the scale-up across global supply chains 2014, 15). Similarly, human labour ought to be taken into account, why labour is being taxed while material

consumption and resource usage could be taxed. A different taxation system would give further impetus to the circular economy and make people consider their consumption habits. (Ellen MacArthur Foundation 2013, 24.)

Fourthly, system thinking is a central part of the circular economy. System thinking focuses on how parts in a system influence each other. Nonetheless, it is important to understand the big picture, not only do things correctly and in an efficient way but also to concentrate to do right things for development, serving the bigger picture in the long term. (Ellen MacArthur Foundation 2013, 24.)

Fifthly, “waste is food” principal suggests that biological nutrients can be returned into the biosphere. Technical nutrients could be returned to the biosphere as well and even with higher quality such a method is upcycling. Upcycling materials require that materials are run through different conversion before raw materials are ready to be released into the biosphere. (Ellen MacArthur Foundation 2013, 24-25.)

2.2 Value creation of sustainable business models

Because of the linear consumption that has been practiced over 150 years societies have disposed lot of materials. In other words, it is destroying the value of a material that was created in the previous stages throughout the life span of a product. The essential question is how can we create more value for products that are lost in a classic linear consumption? The aim is to form loops in linear consumption´s supply chain to maintain or even increase the value of a product. (Hannon 2016.)

A very common misconception is that circular economy has been seen as recycling, even if recycling is not the most value-collecting method in circular economy but it is a part of it. Refurbishment or increased utilization, secondary-life use and part harvesting are more effective ways for the value collection since making the cycle tighter. Thus, more original value is collected and even after 30 years of practising principles of lean

economy through the value chain it is still possible to collect huge amounts of waste. All things considered recycling is only a slightly better solution than disposal. (Hannon 2016.)

Th first value creation method is **the power of the inner circle.** Ellen MacArthur Foundation (2013, 30) defines the power of the inner circle as following:

> *In general, the tighter the circles are, the larger the savings should be in the embedded costs in terms of material, labour, energy, capital and of the associated rucksack of externalities, such as GHG (Greenhouse Gas) emissions, water, or toxic substances.*

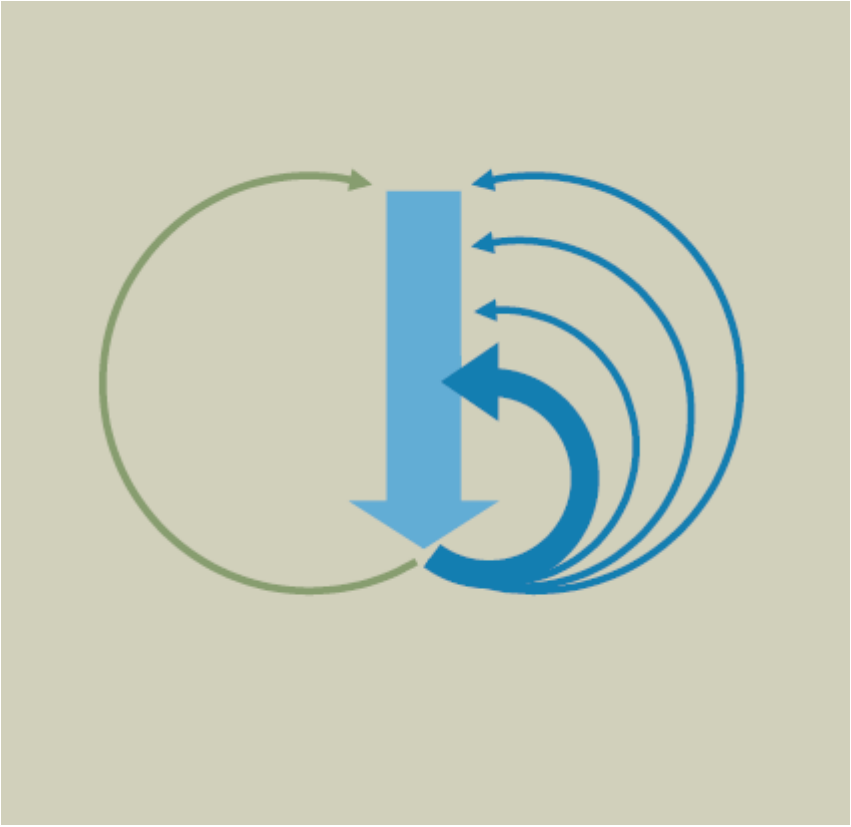


FIGURE 1.Classic Ellen MacArthur Foundation graph of the inner circle

Compared to a linear supply chain, in tighter chains profit can be made from other´s waste since it is more effective to replace virgin material. In other words, when material prices rise or the income decreases, a consumer or manufacturer prefers cheaper alternatives to more expensive and it is called substitution effect. The attractiveness of this system comes

when costs of collecting, reprocessing, and returning the product, part or material is cheaper what linear system offers, for example avoidance of end-of-life treatment. Concerned situation is called arbitrage, where profit and savings are possible to make without a risk. Particularly in the beginning companies can benefit from arbitrage when resource prices and end-of-life treatment costs are relatively high compared to substitution of virgin materials. Scope and scale economies can create more value from higher productivity additions. (Ellen MacArthur Foundation 2013, 30.)

Second value creation method is **the power of circling longer.** Introduction of this method starts with an illustrative example; a washing machine could be used from 1,000 to 10,000 cycles and if it is necessary a washing machine should be repaired when it breaks down. Simply, certain products, components, and materials should be kept longer in a cycle. The continuing use of material in a way removes the material out from the economy. Longer circling makes this option very attractive as well when resource and material prices are increasing. The problem in this system is that product´s efficiency decreases and then arbitrage might vanish. (Ellen MacArthur Foundation 2013, 30.)

According to Lacy and Rutqvist:

> *With this model, a company looks for value not just when considering its end products, but all material streams that run through its business. In other words, every by-product and waste stream is optimised to maximise its revenue potential. (Waste to Wealth 2015, 52.)*

This recovery and recycling model is an attractive option for companies since they can produce large amounts of side products that are possible to sell or reprocess at a reasonable price. (Lacy & Rutqvist 2015, 52.)

An illustrative example of the third method, **the power of cascaded use**: Cotton-based clothing could be used for furnitures as a filling, and after that as an insulation material. After a certain product, a component or material goes through the cascade it will be returned without harm into the biosphere as a biological nutrient. Compared to previous methods,

cascade usage creates a new purpose for material as opposed to in “inner circle” or “circling longer” methods where identical product, component or material is reused. Value creation potential borns when virgin material has substituted to cascaded material for reuse. The arbitrage comes from material substitution and also from its embedded costs like labour and energy savings. (Ellen MacArthur Foundation 2013, 30.)

The last value creation method, **the power of more inputs** is more about how to maximase the potential of above-mentioned methods. To maximase value creation potential, each method requires a certain pureness of materials, and premium quality of products and parts. At the moment the problem is that too often post-consumption material flows are mixed with other materials. Moreover, materials are used, treated or separated without retaining the future´s value and quality. Original designs and products need improvements that full potential of value creation can be reached. For instance ease of separation, better identification of integrated components and material substitution. Not to mention implements in the reverse prosesses, such as avoiding product damage during collection and conveyance, lower rates of need of refurbishment and spoilage of materials throughout collection process. Advantage of these acts to the products and its´ life in the cycle will pay back in latter phases. Cost reduction of the comparative costs is possible when nutrients are maintained with high quality throughout the proceses and in the cycles. What´s more, this usually extends durability and increase general production effiency. (Ellen MacArthur Foundation 2013, 30.)

2.3 CRAiLAR´s example model

In the current World consumers have become more aware of sustainable alternatives and would rather choose less harmful option over a toxic or scarce material. There are two different Supply-Chain options for companies; they can either produce for other companies or for their own purposes. In some cases circular supplies, renewable energy and materials are produced for others that they can produce goods and

services. It is a very typical way for companies. For instance, CRAiLAR Technologies founded in 1998, manufactures renewable and environmental friendly biomass resources, similar as cotton. However, CRAiLAR´s version of cotton is produced of flax, hemp, and other bast fibers that only need 17 liters of water to produce a single kilogram of CRAilAR`s cotton. In comparison, to produce one kilogram of finished cotton anywhere from 2,000 to 29,000 litres of water is needed. (Lacy & Rutqvist 2015, 35-38.)

2.4 Sharing Platfrom

Sharing platform has almost the same idea as the sharing economy, such companies are Airbnb, LiquidSpace and Lyft. Even some of the sharing economy models have threathened classic business operators. However, idea of sharing platform is to link product owners with individuals or organisations that are willing to use them. Product does not have to lay useless since platform offers allowance to co-access or co-ownership for the product. Multiple customers would have an access to the same resource that reduces demand for new manufacturing. Consumption of the product would rise but there is no need for manufacturing. From business aspect, model puts users and owners together and creates new revenue streams. Simply, consumption increases but resource usage stays on a same level. Sharing platform makes renting, sharing, swapping, lending, gifting, or bartering of resources much easier. Product is not offered by itself but the platform owner avoids resource being idle and customer benefits of the service. Sharing is not a new invention but it has never been so persative in business meanings. Notably, digitalisation made the sharing platform to spread widely and be efficient. Recent research demonstrates that there are three reasons why people prefer sharing platform: greater convenience, lower price, and better product and service quality. Sharing platform has faced critic from sharing economy critics that it may affect to the larger economy and its long-term viability. (Lacy & Rutqvist 2015, 84.)

3 CHALLENGES OF CIRCULAR ECONOMY

This chapter addresses different perspective of challenges that did not arise in the results.

3.1 Entrepreneurial challenges

Starting, running, changing and managing a business or an organization have already different challenges such as management, social, political, knowledge, technology, legal, financial, manpower and economical challenges. Yet, more barriers occur between an entrepreneurship and sustainable development due to the nature of entrepreneurship. Sustainable entrepreneurship can be approached from a corporate social responsibility-based angle, for instance, determinated vision of the sustainable development where social, economic and environmental impacts are in balance. Transform from linear economy to a sustainable economy contains several different challenges, barriers and risk factors. Small-medium sized enterprises (SMEs) usually face difficulties in adapting circular economy due to socio-cultural circumtances and institutional realities. (A Review of the Circular Economy and Its Implementation 2015, 44.) Schaltegger and Wagner (2007) regard management as the biggest challenge, tight regulations, principles and requirements for business give unfavourable basis to operate.

According to Uslu et al. (2015) biggest challenges and barriers are:

> *Low levels of activity, limited support programs, lack of green capacity, acces to private capital, the educational system, cultural norms, implementation and control deficiencies, newness of green entrepreneurship, lack of public awareness and lack of purchasing green products.*

Other challenge is between entrepreneurship development and in renewable energy sector; cooperation between these two sides are not effective enough to create new innovations. On the other hand, when cooperation is successful it creates useful solutions of commercialising new innovations. (Vaghefpour & Zabeh 2012.)

3.2 Innovational challenges

Circular economy and sustainable development should always rely on renewable resources when it is possible and if non-renewable resources are used it should be done under the circumstances of reduce, reuse and recycle to make materials´ lifespan longer and sustainable. When trading happens between economic growth and resources decline different type of concerns emerge, for instance conflicts, weighing economics, social and environmental worries. Disasters and extermination of resources is possible to evade, innovations have potential to solve the problems and make evolution in society and economy. Factors and operators behind this concerned hypothesis are believed to be green, clean and low-carbon entrepreneurs who can deliver innovations to products and services. Notwithstanding that even entrepreneurship played a big role in development and industrialization in the past, yet it was non-sustainable evolution. With this in mind, there is little or not much signs how entreprenuers would solve the problems and create innovations for sustainable development since big part of the entrepreneurship literature does not examinate sustainable development. Thus, the assumption that entrepreneuers have the solution and outcome to make revolution in sustainable development remains in vague, but the potential is there. (A Review of the Circular Economy and Its Implementation 2015, 47)

Most of the large firms have adopted some forms of sustainable policies. The reason behind the new policies is to improve companies´ competitiveness, investments on sustainability creates better access to certain markets, stand out in market, revenues from selling green technology, better risk management, lower cost of resources, lower cost of capital and lower cost of labor. Nonetheless, sustainable development is very slow in entrepreneurial economics, and literature does not take much inspection how entrepreneurship is going to create sustainable solutions for social and environmental related market key issues. (A Review of the Circular Economy and Its Implementation 2015, 47)

4 BACKGROUND OF THE STUDY COUNTRIES

Study countries were South Africa, Namibia and Botswana. Background data concentrates on general information about the countries, like economical and political environment. Particularly economical situation gives important information when studying Circular Economy and related subjects. Figure 2 indicates locations of the study countries.

FIGURE 2. The map of SADC (Southern African Development Community) member states (SADCmet 2011)

4.1 South Africa

South Africa has the biggest GDP in SADC (Southern African Development Community) and that makes it the strongest economy in region. South Africa along Mauritius has remarkable size of manufacturing sector, approximately 25% of GDP. (Regional Indicative Strategic Developmen Plan 2016. 10)

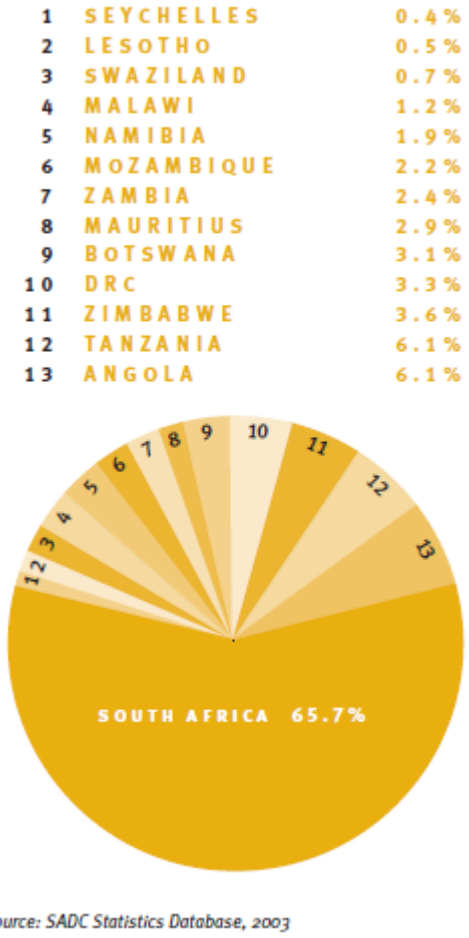


FIGURE 3. SADC GDP distribution (SADC)

In recent years South Africa´s economy has slowed down. Main export sectors; mining and agriculture have weakened as well as secondary exports (manufacturing electricity, gas and water). To achieve high and stable growth South Africa has to find a solution managing potential growth with increasing income inequalities.
Concerned acts would improve productivity and give public support to poverty among citizens. Energy and green growth technology possesses a huge potential to create jobs for youth and develop their skills. Not to forget an economical enhancement it would give. (African Development Bank 2013, 5.)

Generally governance in South Africa is well organised, it has democratic institutions, an independent active media and stabile law, which have quaranteed peace and composure in the country. South Africa is ranked

5th out of 53 African countries in the Mo Ibrahim Index of African Governance. (African Development Bank 2013, 5.)

On the other hand, South Africa´s governmental instability is making foreign investors reluctant to invest. Struggle with corruption and fight against it is not efficient enough. Incidents in Parliament itself must be handled appropriately, the institution as well as the electorate. (Wakefield 2015.)

4.2 Botswana

Botswana is regarded as the most stable country in Africa by African Development bank, considering the political environment with a free media and a sovereign judicial system. Economical freedom, citizens´ freedom and well working democracy are on a very good level in Botswana. 77% of the area is occupied by Kalahari Desert with small freshwater resources, infrequent rain and droughts are on of the major threats and problems for the country. Botswana holds lot of valuable natural resources that has been the main driver for development. Government of Botswana has released a number of projects that are targeting to renewable energies in rural areas, create non-motorised transport in the City of Gaborone and different type of nature conservation programs. At the moment energy production is dependent on coal and government has ensured responsible usage of coal. (African Development Bank 2009, 1-6.)

Botswana obtained its independence in 1966 and ever since Botswana Democratic Party (BDP) has won all the elections that are considered free and fair. A same trend is expected to continue due to emphasise shown to macroeconomics by every administration of BDP. Botswana has risen from being a one of the poorest country in the World to a middle-income country very fast. The main factors for Botswana´s success to reach a status of middle-income country are sensible economic management, commited leadership, tolerable institutional architechture, effiency on

national development and trustful judicial system. (African Development Bank 2009, 1-6.)

The risk for corruption is very small in Botswana which makes it very small risked place for business. Botswana is regarded to be the least corrupt country on the African continent. However, nepotism and patronage is happening a lot in the government sector. Botswana has set strict penalties for corruption, long sentences and high fines for both, individuals as well as corporations. (Botswana Corruption Report 2016.)

Four decades after independence Botswana´s economical growth average has been almost 9% because of healthy macroeconomic policies and wise control of diamond business. Having a largest value and volume in the whole World as a diamond producer implicates that mining sector is the main factor of economical growth in Botswana. Over the last few years economical growth has slowed down to the average of 4.3% due to global economic slowdown. In light of global economic downturn, it has exposed Botswana´s dependency on mining and due to the receptivity to crisis. The rehabiliation of economical growth is difficult if mining is sinking because other areas of economy are very narrow in the country for example agriculture covers only 1.9% of the GDP (2007-2008). (African Development Bank 2009, 1-6.)

Botswana is part of the World economy. About two-third of the country´s revenue is from exports, mostly diamonds and minerals that is almost 50% of GDP. Low demand and decreasing prices of minerals affects crucially to country exports. Botswana imports 70% of its imports from South Africa which increase the vulnerability of crisis if distribution problems occur in South Africa. An increase of food and global oil prices raised an annual average inflation a lot during the global crisis 2007-2008 but now it is more stabilised. However, inflation due to reasons mentioned above indicates the lack of versatility of the country´s economy. (African Development Bank 2009, 1-6.)

Nearly third of the population live in a poverty and unemployment rate is about 20%. While mining employs only less than 5% of the people on working age, poverty and inequality are flourishing. Eventhough, Botswana has been very successful in macroeconomics, the problems has occurred to divide wealth and reduce poverty. Excellent success and achievements in development has not removed the inequality when the country´s high income inequality (Gini coefficient of 0.61) is on a fairly high level. However, Botswana performs very well in Human Development Index (HDI), better than its neighbouring countries. (African Development Bank 2009, 1-6.)

Botswana meets most of the definitions of gender equality. Women are equal with men in terms of marriage, property holding, dwelling and guardianship of minor children. Laws that used to restrict women´s rights have been removed. Nevertheless, a cultural practice partly maintains the previous predominant situation, especially in rural areas. The literacy rate is nearly equal with women and men, about 83%. (African Development Bank 2009, 1-6.)

TABLE 1. Population and area data of the stude countries (World Bank 2016)

Data 2016	**South Africa**	**Namibia**	**Botswana**
Population	55 908 865	2 479 713	2 250 260
Population growth (annual %)	1,6	2,2	1,8
Population density (p/ m²)	46,1	3,0	1,8
Surface area m²	1 219 100	824 300	581 700

4.3 Namibia

Namibia is one of the most sparsely populated and driest countries on earth, population density is only 3 persons per square kilometer. Sparsely populatenes has forced Namibia to build more than 350 small aerodromes and airstrips. 44,410 km of roads offers a quite good access around the country, but only 15% of roads are paved. Walvis Bay, the only deep-water port in Namibia controls imports and exports, and it is one of the fastest ports in Africa. (The Commonwealth 2017)

Namibia is regarded as an upper middle-income country that has created a good macroeconomic management. Nonetheless, poverty, inequality and unemployment are flourishing. Due to global economic crisis its economy growth has decelerated in recent years. Namibia´s economy is very dependent on mining of diamonds and uranium that helped Namibia to get through the economical turbulence. Furthermore, the reliance on mining has also exposed a problem that Namibia needs more diversity on its economy that jobs can be created for the majority of the population. Especially diamonds and other minerals are the main exports with fish, grapes, live animals and animal products. Food, fuel, energy and passenger vehicles are imported from South-Africa and it covers almost the total of the Namibia´s imports, trade activity with other SADC countries is very small. (African Development Bank 2013 1-4.)

Namibian dollar (NAD) is attached to the South African rand and CMA that bonds Namibia to South-Africa tightly, not to mention the importancy of trade as mentioned above. Membership of the rand Common Monetary Area (CMA) gives very limited implements for controlling inflation since lack of options in monetary and exchange rate policies. However, CMA has brought constancy to country´s macroeconomics. Basically, biggest threats to Namibia´s economy are weak global demand for mineral export which contributes 37% of the export earnings, economical turmoil in South Africa and environmental disasters. (African Development Bank 2013, 1-4.)

The economies of Namibia and South Africa are tighly linked via history and RSA is Namibia´s biggest trading partner. Not only 80% of the consumables being imported from South Africa but also companies have a large presence in Namibia and are playing a big role in different sectors such as housing, food and beverages, construction, hotels and leisure, banking, and medical services. In conclusion, Namibia and RSA have strong relations at many levels. (International relations, 2014) Namibia can be conserned as a little South Africa, it takes lot of influence from RSA. Since most of the companies are South African based, economical and governmental influences come from RSA. (South African Yearbook 2014)

The 2013/14 Global Competitiviness Report (GCR) ranked Namibia above most of the African countries, 8th best country in sub-Saharan Africa in creating proper environment and tools for private sector to operate. Compared to rest of the World Namibia´s ranking was 90 out of 143 countries. According to Country Strategy Paper (CSP) Namibia´s government is making efforts to improve competitiveness of business environment to boost development of private sector and attract investors. To open bottlenecks government launched The Public-Private Partnership –program. (African Development Bank 2013, 4-10.)

Poverty is upsettingly high in rural areas 27 percent while in urban areas it is only 9 percent. All in all poverty has decreased from 37,8% to 19,5% in last ten years and poverty is more common in female-headed houses. The youth unemployment is alerting high since 49% of 20-24 year olds are without a job. The structure of labor market contains several problems that cause unemployment; insufficient skills and current skills incompatibility with high difference in income. Structural revolution in economics is necessary so that the unemployed part of residents have acces to economic opportunities and able to create new ones. (African Development Bank 2013, 4-10.)

Government launched program NDP4 (Fourth National Development Plan) which targets on high and sustainable growth, employment creation and

reducing income inequality. One of the goals is to create at least 18 000 jobs annually and reduce the amount of low-income households. The program with the help of World Bank is focusing on transport, energy, water and to improve the operational environment for private sector. (African Development Bank 2013, 4-10.)

The South West Africa People´s Organisation (SWAPO) has been the biggest party in freely and fairly held elections ever since Namibia got its independence from South Africa in 1990. In 2013 Namibia was ranked the sixth best country on good governance in Africa that consist 52 countries by Ibrahim Index of African Governance. Similarly, according to Corruption Perception Index by Transparency International, Namibia is the seventh least corrupt country in Sub-Sahara. (African Development Bank 2013, 1.) Namibia is widely titled as one of the most liberal state in Africa. Still continuing SWAPO´s independence honeymoon has brought three quarters of the seats in the parliament almost at every election, in other words approximately 75% of the votes. (Political Party Life in Namibia 2009, 1-2.)

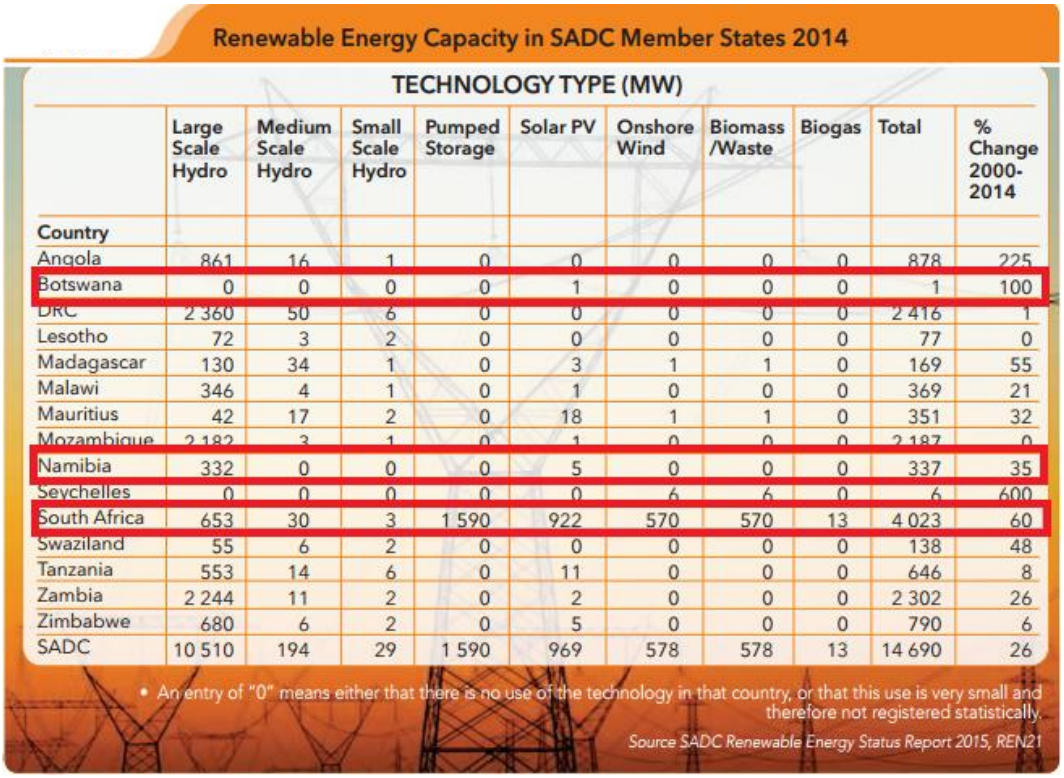
5 STUDY AREA´S CIRCULAR ECONOMY POTENTIAL

Africa as a second fastest growing economy in the world continues improving business environment and expanding regional markets (African Economic Outlook 2016 5). Examination of potential concentrates mainly on renewable energy since it is one the most important thing in Circular Economy to rely on. South Africa offers some activity in Circular Economy so it is ideal to discuss.

5.1 Renewable energy

Southern Africa possesses great potential on renewable energies, vast resources of solar, wind, biomass and geothermal energy must be converted into energy. Several countries in SADC are under electricity supply shortage and looking for solutions to fix it. Table 1 indicates how study countries use renewable energies at the moment. Table 2 shows the amount of green energy could be generated in the future if new policy is executed. With this in mind, renewable energy potential is enormous in the view of circular economy. (Energy Monitor 2016, 53-59.)

TABLE 2. Renewable energy capacity in SADC member states 2014 (Energy Monitor 2016, 53-59.)



Renewable Energy Capacity in SADC Member States 2014

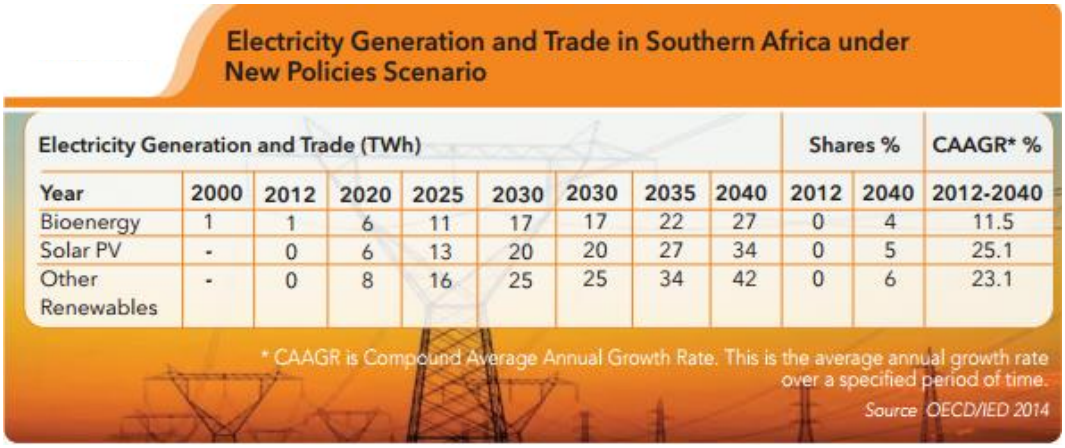
TECHNOLOGY TYPE (MW)

Country	Large Scale Hydro	Medium Scale Hydro	Small Scale Hydro	Pumped Storage	Solar PV	Onshore Wind	Biomass /Waste	Biogas	Total	% Change 2000-2014
Angola	861	16	1	0	0	0	0	0	878	225
Botswana	0	0	0	0	1	0	0	0	1	100
DRC	2 360	50	6	0	0	0	0	0	2 416	1
Lesotho	72	3	2	0	0	0	0	0	77	0
Madagascar	130	34	1	0	3	1	1	0	169	55
Malawi	346	4	1	0	1	0	0	0	369	21
Mauritius	42	17	2	0	18	1	1	0	351	32
Mozambique	2 182	3	1	0	1	0	0	0	2 187	0
Namibia	332	0	0	0	5	0	0	0	337	35
Seychelles	0	0	0	0	0	6	0	0	6	600
South Africa	653	30	3	1 590	922	570	570	13	4 023	60
Swaziland	55	6	2	0	0	0	0	0	138	48
Tanzania	553	14	6	0	11	0	0	0	646	8
Zambia	2 244	11	2	0	2	0	0	0	2 302	26
Zimbabwe	680	6	2	0	5	0	0	0	790	6
SADC	10 510	194	29	1 590	969	578	578	13	14 690	26

• An entry of "0" means either that there is no use of the technology in that country, or that this use is very small and therefore not registered statistically.

Source SADC Renewable Energy Status Report 2015, REN21

TABLE 3. Renewable energy generation and trade under new policies scenario (Energy Monitor 2016, 53-59.)



Electricity Generation and Trade in Southern Africa under New Policies Scenario

Electricity Generation and Trade (TWh)									Shares %		CAAGR* %
Year	2000	2012	2020	2025	2030	2030	2035	2040	2012	2040	2012-2040
Bioenergy	1	1	6	11	17	17	22	27	0	4	11.5
Solar PV	-	0	6	13	20	20	27	34	0	5	25.1
Other Renewables	-	0	8	16	25	25	34	42	0	6	23.1

* CAAGR is Compound Average Annual Growth Rate. This is the average annual growth rate over a specified period of time.

Source OECD/IED 2014

5.2 Circular Economy in Africa

According to Alex Lemille, founder of sustainability consultancy Wizeimpact from Cape Town claims that some sort of Circular Economy has always been in Africa. Sharing, waste usage and selling as a resource or shared transportation is part of people´s way of life. (Perella 2015.)

According to President of the IWMSA (The Institute of Waste Management of Southern Africa) Professor Suzan Oelofse (2011):

> *Southern Africa's landfill space is dwindling. In reality, zero waste to landfill is not possible as waste treatment technologies also result in by-products that need to be disposed of. We should however strive to minimise waste going to landfill as far as possible through avoidance, reuse and recycling. There are various implementable processes available to help divert precious resources and materials from ending up at these sites. A circular economy is key in achieving this and is all about creating a restorative and regenerative system - especially when it comes to the manufacturing industry.*

The Department of Environmental affairs in South Africa is responsible for The National Waste Management Strategy (NWMS) has set up goals like promoting waste minimization, reuse, recycling and recovery of waste. The

ultimate aim is to prevent waste ending up to the landfill or convert it to something else. Some efforts are also put on providing basic level of waste services and separation at source. Strategy emphasises impact of waste management on the social and economical aspect, approaching the issue within the green economy. Moreover, NWMS´s target is to raise the awareness impacts of the waste on people´s health, well-being and the environment. (National Waste Management Strategy 2011, 16-17.)

5.3 Lack of skills, REDISA and unemployment

WISP (Industrial Symbiosis programme in the Western Cape) has identified challenges on products. Products are not designed for reuse and disassembly, main reason is that design is mostly done abroad. Business cases lack alternative use of end-of-life materials and lack of different skills that needed for implementing circular economy to success. WISP programme manager Sarah O´Carroll (Moving SA towards a restorative, circular waste economy 2016) declared challenges:

> *Innovation is vital when it comes to implementing circular economy practices in South Africa, especially when adapting technologies which may be used in developed countries, or developing new technologies from scratch," says O'Caroll. "South Africa, with its smaller scale and lower density of manufacturing activity, requires distributed solutions that are financially viable. Education and awareness are critical. There is a stigma around the use of secondary materials, fortunately, there are cases in the construction sector where secondary materials have better properties compared to virgin materials.*

According to Hermann Erdnman (2016), an entrepreneur and current CEO of the Recycling and Economic Development Initiative of South Africa (REDISA),

> *In South Africa, over 40 percent of waste is dumbed into the environment. REDISA estimates there are 60 million waste tyres laying in stockpiles accros the country, many of which are illegal and unsafe. At the same time, over 25 percent of South Africa´s population is unemployed.*

To resolve the issue of dumbed tyres REDISA released a program 2015, during that program 180 860 tons of waste tyres were collected, 114 719 tons of waste tyres were turned into new products and 3044 jobs created by REDISA. (The Circulars 2016 Yearbook 2016, 13.) At the moment South Africa is struggling with the youth unemployment that rate is 50% among the people aged 15 to 25 that covers almost 2% of the whole world´s unemployed youth. REDISA has done pioneer work in recycling, turning waste into worth and trying to recruit young people. Results have been good and proving a fact that circular economy could also be the solution for the unemployment. REDISA declares the circular economy is not only balancing economic growth, developing infrastructure, creating small business and job opportunities, lowering emissions and positive environmental impact. Environmental problems and scarcity of resources form a threat in developed world as well as in developing world through its efforts to achieve West´s prodigal lifestyle. Circular economy as a solution for the environmental issues makes it economically attractive and key factor to the developing countries to rise. (South Africa: Could Circular Economy Be the Solution to Youth Unemployment? 2015)

South Africa has been under electricity shortages and it has damaged RSA´s economy. Energy crisis is not only about incomplete capacity, transmission and distribution of electricitys, the whole system needs reconsideration. Investments in generation capacity does not solve the whole problem, flexible grid relying on renewable energy sources would open new doors. However, electricity generation is becoming more decentralized and it is on the verge of abanding monopolistic model. New players are stepping in and are well needed in RSA`s electricity generation that has been controlled by Eskom. (How do we solve South Africa´s energy crisis? 2015.)

6 HONKAJOKI OY AND METHODS USED IN THIS STUDY

Aims of the study were to examine Circular Economy potential and attitudes towards Circular Economy in South Africa, Namibia and Botswana. Theory part considers principals, value creation methods, business models, challenges and information about the study countries, from the view of the Circular Economy.

This study is qualitative, qualitative research allows more flexible working methods. Thus, it was possible to get rich and deep material. (Hirsjärvi, Remes & Sajavaara 2009, 135-137.) Material was collected by interviewing four different persons who have a lot of experience about Africa as a business area. Interviewees wanted to stay unknown. Interviews were empirical and conversational. Themes were Circular Economy, attitudes, challenges and potential in southern Africa.

SWOT analysis was decided to be used in this study, SWOT comes from acronyms: strengts, weaknesses, opportunities and threats. SWOT gives an analytical framework that could help company to face its challenges and discover promising market areas and feasibility. It is very difficult to explore business´s future without surveying it from different angles, which includes look at all internal and external points. SWOT analysis offers a simple and a straighforward illustration. (Businessnewsdaily 2017.)

Honkajoki Ltd Finland is the client of the (consulting) assignment of this case study which is my Bachelor thesis too. Case study was given to me during my internship in Namibia. Honkajoki Ltd is Finnish company that uses Circular Economy.

> *Honkajoki Oy operates a recycling facility that returns animal-based raw materials to nature. Its highly refined and carefully regulated production processes return fertilisers and animal feed to nature and produce raw material for energy production. The company's agroecological operating model is based on the natural cycle.*

> *In addition to animal feed, fertilisers and raw material for energy production, Honkajoki Oy provides transport and consulting services for its customers. Its service business is closely linked to the ecological operating principles aimed at improving agricultural productivity in a sustainable manner. (Honkajoki Ltd 2017.)*

Honkajoki Ltd was established 1967 and it is located in Honkajoki, 120 kilometres from Tampere to the north-west. Honkajoki Ltd employs some 80 professionals in 2012. Honkajoki Ltd is owned by HK Scan (50%) and Atria Oyj (50%). Honkajoki group includes the subsidiary Findust Protein Oy as well. Turnover in 2012 was approximately 29 million euros. (Honkajoki Ltd 2017.)

Honkajoki Ltd´s operations are supervised by authorities like European Union and the Finnish Food Safety Authority Evira. Products which are exported outside of Finland have deserved several certificates. Honkajoki Ltd emphasises clean and safe produsing in their website:

> *The processed byproducts are all derived from food-grade raw materials. Clean and safe operating methods and operating environments also contribute to product safety. Honkajoki Oy's production facilities employ technologically advanced production equipment and processes. The cold chain approach used in the operating model also facilitates a high level product safety. (Honkajoki Ltd 2017.)*

7 RESULTS AND ANALYSIS OF THE SWOT´S

In study countries most of the citizens are living in poverty and struggling to get basic needs for daily life. People do not have time to think about environment or resources since their only goal is to survive day by day. On the other hand people in poverty practice their own circular economy, people recycle and reuse goods much as possible. In comparison, growing middle-class is generating lots of waste and do not care about environment either. Taste of first world living standards and luxurious goods has made middle-class careless consumers. (Interview 2016)

Size of Namibia creates challenges, small communities and long distances makes transportation quite expensive and time taking. But the port and airstrips offer something that some of the countries are lacking. (Interview 2016)

Electricity outage gives opportunities to alternative solutions. When a certain country or community goes through a serious problem it might be a blessing to them. If people do not have shortage of something they will not think “what if someday we have this problem”. But now when they have a problem it is necessary to solve it. With this in mind, alternative energy sources and innovations have their moment to flourish. For example, fertilisers are very expensive in SADC. Thus, many farmers have to blend fertilisers with water to get enough fertiliser. Again there is an opportunity for innovation and alternative solutions. (Interview 2016)

Lack of skills and education are big problems. Adapting progressive technology is difficult when people are used to manual work. In Africa have been many cases where a new product or a factory has arrived in a country but no one knows how to use it. Also reacting to a problem is slow and especially in countryside religions plays a big role. For example, if farmer´s harvest is poor it might be “God´s will and he is testing us”. Hence, there is no need for problem solving or finding a reason for a bad harvest. In addition, most of the agriculture is very small scale act and it is not commercialised apart from few big companies. (Interview 2016)

Ownerships are very problematic, some of the land areas are owned by tribes and some areas by government. Lot of fights occur regarding the land owning. For obtaining access to use land or site local operator is necessary in most of the cases. (Interview 2016)

Corruption, state monopolies and misinformation creates own challenges at times. For example in Namibia, NamPower, state owned energy giant refuses to buy solarenergy from people. A government is not always making it easy to operate. (Interview 2016)

Africa has developed rapidly and become more selfsufficient and it is a good thing. But it has also raised the proudness and "we do not need help from western countries anymore" thinking. This makes it more difficult for newcomers to get involved into business in Africa. Western countries have faced also competition from Chinese companies. Different philoshopy and cheaper production in China makes competition tighter and harder. (Interview 2016)

7.1 South Africa

In the FIGURE 4 is presented the SWOT analysis of South Africa. Some of the results could be inserted into another box as well, when resources are scarce it is a problem but it could be an opportunity for the alternative option. Moreover, environmental disaster could have disastrous effects but it could force to make innovations to avoid disasters.

FIGURE 4. SWOT matrix of South Africa

7.2 Botswana

In the FIGURE 5 is presented the SWOT analysis of Botswana. Botswana offers very stable government and environment for business. Botswana is not big as South Africa so problems are smaller as well as economics.

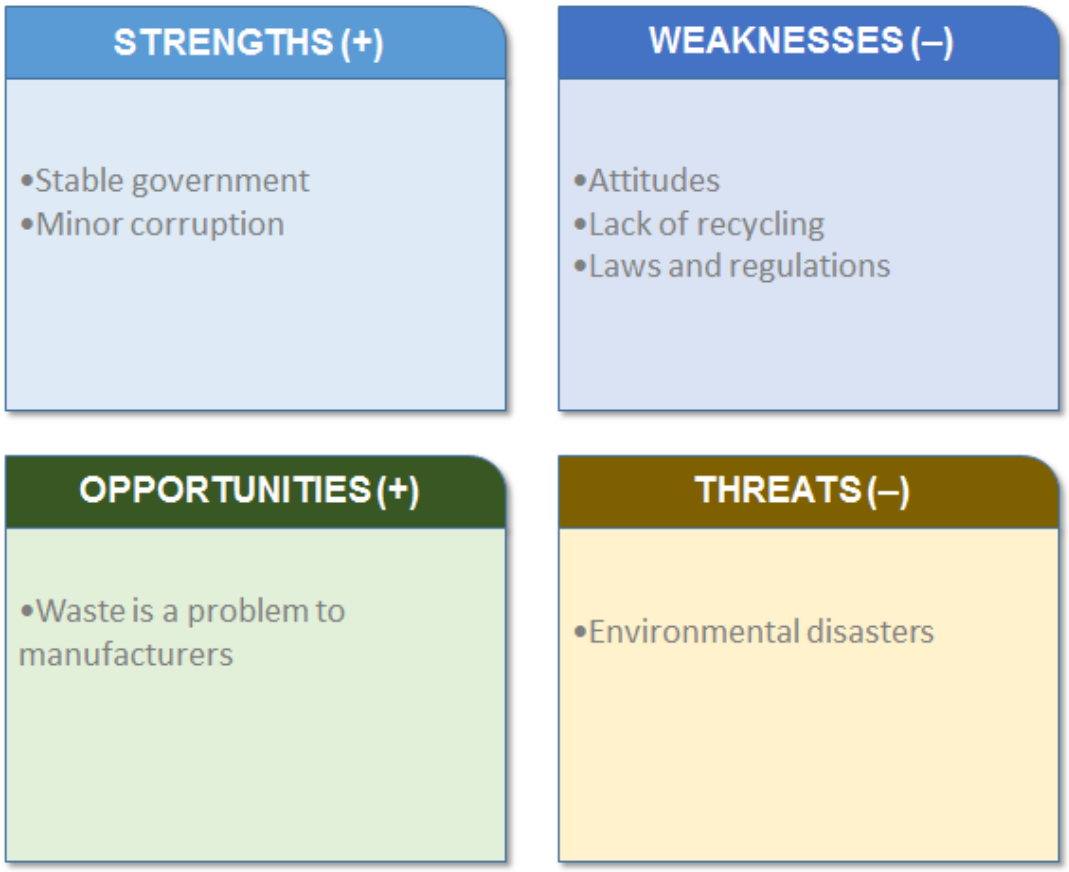


FIGURE 5. SWOT matrix of Botswana

7.3 Namibia

In the FIGURE 6 is presented the SWOT analysis of Namibia. Results are very similar with Botswana but more informational since most of the study and work were based in Namibia.

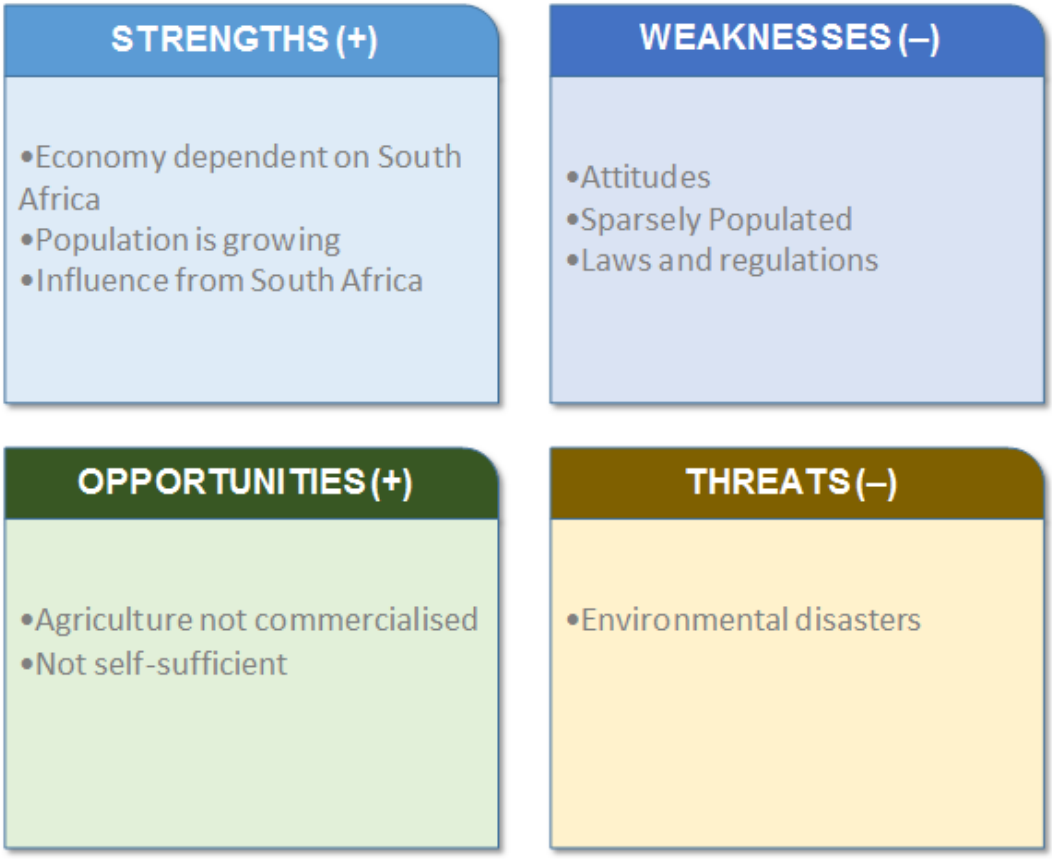


FIGURE 6. SWOT matrix of Namibia

8 CONCLUSIONS

The purpose of the study was to examine what challenges and opportunities circular economy possesses in South Africa, Namibia and Botswana. The main results are almost valid in every country in SADC but this study concentrated more in these three countries. The results consisted of 3 main questions. 1. Attitudal challenges 2. Circular Economy potential is huge. 3. Lack of skills.

Considering the scarcity and demand of resources, circular economy offers potential solutions in Africa. In Europe it is little bit easier since people have adapted green thinking. But in Africa Circular Economy has to be approach from a different angle. Sustainable development is not the main thing in mind when third world countries are developing. It is difficult to change attitudes quickly so people should be convinced some other way. A good thing is that Africans have practiced some sort of circulating but not in business manner. Thus, they have an idea of keeping resources and products in cascade. Economical potential must be enhanced way or another to get local operators convinced about Circular Economy and its beneftis. On the other hand, corruption, nepotism and stagnation on old habits have made investors reluctant. Investing into African country is not always the most attractive option, not because of lack of possible profits and opportunities but an unstable governance and harmful persistency.

As mentioned in chapter 4 ‘From Linear Consumption to Circular Economy’, renewable energy is an essential cornerstone to adapt Circular Economy models. Endless resources of solar energy could be the main energy source in the future in southern Africa and therefore offer opportunities for companies. Windpower, biogas, biowaste usage is small but new policies in energy sector might break the barriers. Currently monopolies are controlling energy markets however a revolution is inevitable in energy sector but how fast it happens is uncertain. Dependency on coal burning can not last long anymore. Pushes to evolve from a development country to a developed country bring more

responsibilities and cherisment of sustainable development. At certain point governments, companies and individuals are forced to find an alternative solution to fulfill their needs.

Along the study an issue with lack of skills came up repeatedly. Different innovations have been brought into Africa but no skills how to utilize them. Apparently too many of the importers are satisfied when they sell a product and are not that interested is the buyer capable of using it. Concerned approach is inefficient for both, buyer can not use a product properly and manufacturer loses reference and positive reputation. Thus, when a product have brought to a certain place, education and training must be given how to use it efficiently.

Honkajoki Oy has a vision to bring their products into Souther Africa and this study could help them when considering feasibility in the study area. Further studies should concentrate on how to sell ideas of circular economy to the people in South Africa and what type of models would be suitable to use in study countries. As a recommendation for Honkajoki Oy, some sort of co-operation with other companies should be started, that would suit in the Circular Economy. Thus, complete ready-to-use packages could be sold.

8.1 Study process

On the whole study process went well, informational and compact case was collected. Main challenges were to arrange interviews but in the end valuable conversational interviews arranged. Case study`s data were gathered during my internship in Namibia in Clay Meadow Consulting Pty. Support and contacts of my superior were extremely important to make this study possible. My own 12 month period as a student and an intern gave me a lot of implements for the study. Personally I learnt lot of about Circular Economy and business environment in southern Africa. My experiences from Africa will hopefully benefit me in the future and open opportunities. Study goals were reached decently but it raised more

questions and possible topics to study in the future. I hope that some day I will be answering to those questions and be part of the Circular Economy´s breakthrough in southern Africa.

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